

EXPERIMENTAL EYE RESEARCH

Editors-in-Chief

E. A. BALAZS and K. E. EAKINS

Section Editors

A. Bill, L. Z. Bito, H. Bloemendal, J. G. Hollyfield, P. J. O'Brien, J. Piatigorsky
and A. Spector

Editors

D. C. Beebe	H. J. Hoenders
J. C. Besharse	J. Horwitz
F. Bettelheim	S. Iwata
P. Bhattacharjee	B. Jacobson
J. E. Brown	M. E. Langham
A. I. Cohen	R. E. Marc
Y. Courtois	D. M. Maurice
H. Davson	R. Meyers-Elliott
G. Duncan	V. N. Reddy
B. E. J. Ehinger	H. Ripps
D. B. Farber	J. W. Rohen
W. Garner	J. C. Saari
M. O. Hall	R. Tripathi
J. Harding	J. A. Zadunaisky

VOLUME 41

1985



ACADEMIC PRESS

London Orlando San Diego New York
Toronto Montreal Sydney Tokyo
(Harcourt Brace Jovanovich, Publishers)

No part of this volume may be produced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

1. Huxley	17. C. B. B. B.
2. Hall	18. C. B. B. B.
3. Hall	19. C. B. B. B.
4. Hall	20. C. B. B. B.
5. Hall	21. C. B. B. B.
6. Hall	22. C. B. B. B.
7. Hall	23. C. B. B. B.
8. Hall	24. C. B. B. B.
9. Hall	25. C. B. B. B.
10. Hall	26. C. B. B. B.
11. Hall	27. C. B. B. B.
12. Hall	28. C. B. B. B.
13. Hall	29. C. B. B. B.
14. Hall	30. C. B. B. B.
15. Hall	31. C. B. B. B.
16. Hall	32. C. B. B. B.

ACADEMIC PRESS

London, Toronto, San Diego, New York
Cambridge, Madrid, Mexico, Tientsin
Wiley, New York, London, Toronto



CONTENTS OF VOLUME 41

NUMBER 1, JULY 1985

EDITORIAL

BETTELHEIM, F. A. and ALI, S. Light Scattering of Normal Human Lens III. Relationship Between Forward and Back Scatter of Whole Excised Lenses	i
DELAMERE, N. A. and PATERSON, C. A. Characteristics of ⁴⁵ Ca Uptake by the Rabbit Lens	1
BETTELHEIM, F. A. and CHYLACK, L. T. JR Light Scattering of Whole Excised Human Cataractous Lenses. Relationships Between Different Light Scattering Parameters	11
RICHARDSON, T. M., MARKS, M. S., AUSPRUNK, D. H. and MILLER, M. A Morphologic and Morphometric Analysis of the Aqueous Outflow System of the Developing Cat Eye	19
DILLON, J., ROY, D. and SPECTOR, A. The Photolysis of Lens Fiber Membranes	31
DOSHI, M., VOADEN, M. J. and ARDEN, G. B. Cyclic GMP in the Retina of Normal Mice and those Heterozygous for Early-onset Photoreceptor Dystrophy	53
ZIGLER, J. S. JR and HESS, H. H. Cataracts in the Royal College of Surgeons Rat: Evidence for Initiation by Lipid Peroxidation Products	61
CHEN, S. C. and CHEN, C.-H. Purification and Characterization of Two Vascular Endothelium Effectors from Fetal Bovine Retina, Vitreous, and Serum	67
REDDY, T. S. and BAZAN, N. G. Synthesis of Docosahexaenoyl-, Arachidonoyl- and Palmitoyl-Coenzyme A in Ocular Tissues	77
TSUNG, P.-K. and LOMBARDINI, J. B. Identification of Low-Ca ²⁺ - and High-Ca ²⁺ -requiring Neutral Proteases in Rat Retina	87
SUNALP, M. A., WIEDEMANN, P., SORGENTE, N. and RYAN, S. J. Effect of Adriamycin on Experimental Proliferative Vitreoretinopathy in the Rabbit	97
IGIĆ, R. Kallikrein and Kininases in Ocular Tissues	105
JERNIGAN, H. M. JR Role of Hydrogen Peroxide in Riboflavin-sensitized Photo-dynamic damage to Cultured Rat Lenses	116
	121

NUMBER 2, AUGUST 1985

JENTSCH, T. J., VON DER HAAR, B., KELLER, S. K. and WIEDERHOLT, M. Response of the Intracellular Potentials of Cultured Bovine Lens Cells to Ions and Inhibitors	131
PERESS, N. S., GRUENEWALD, R. and CARIOTO, L. A. Intra-ocular and CNS Listeriosis Following Systemic Infection in Wistar Rats with Chronic Serum Sickness	145
SCHMIDT, S. Y., BLANKS, J. C. and SANDBERG, M. A. Enhancement of (PolyA ⁺) RNA Synthesis in Light in Isolated Intact Photoreceptor Cells of the Rat	159
IWATA, S. and HIKIDA, M. Studies on the Eye Lens in Poikilothermal Animals. I. Comparative Studies on Cation Maintenance Systems in Rainbow Trout and Rat Lenses	171
HIKIDA, M. and IWATA, S. Studies on the Eye Lens in Poikilothermal Animals. II. Stimulation of Anaerobic Glycolysis in Rainbow Trout Lens Incubated with Ca ²⁺ -free Medium	179
LITIN, B. S., JONES, M. A. and HERSCHLER, J. Aqueous Humor-Stimulated Protein Biosynthesis in Ocular Tissue Fibroblast Culture	183
LI, W., CHAN, L. S., KHATAMI, M. and ROCKEY, J. H. Characterization of Glucose Transport by Bovine Retinal Capillary Pericytes in Culture	191
SINGH, S. V., SRIVASTAVA, S. K. and AWASTHI, Y. C. Purification and Characterization of the Two Forms of Glutathione S-Transferase Present in Human Lens	201
BOULTON, M. and MARSHALL, J. Repigmentation of Human Retinal Pigment Epithelial Cells In Vitro	209

HILL, D. W. and HOUSEMAN, J. Retinal Blood Flow in the Cat Following Periods of Light and Darkness	219
GRIMES, P. A. Fluorescein Distribution in Retinas of Normal and Diabetic Rats	227
BIZEC, J. C., KLETHI, J. and MANDEL, P. Calcium-dependent Regulation of Adenylate Cyclase and Phosphodiesterase Activities in Bovine Lens: Involvement of Lens Calmodulin	239
NAKAZAWA, M., TSUCHIYA, M., HAYASAKA, S. and MIZUNO, K. Tyrosinase Activity in the Uveal Tissue of the Adult Bovine Eye	249

NUMBER 3, SEPTEMBER 1985

KITAOKA, M., NAKAZAWA, M. and HAYASAKA, S. Lysosomal Enzymes in Human Tear Fluid Collected by Filter Paper Strips	259
KULKARNI, P. and SRINIVASAN, B. D. Anti-inflammatory Effects of Ketoprofen in Rabbit Corneal Epithelial Wound Model	267
PENN, J. S., BAKER, B. N., HOWARD, A. G. and WILLIAMS, T. P. Retinal Light-damage in Albino Rats: Lysosomal Enzymes, Rhodopsin, and Age	275
TSUNG, P-K. and LOMBARDINI, J. B. Cathepsin B and D, and Ca^{2+} -dependent Neutral Protease Activities in the Retina of Taurine-depleted rats	285
MCGAHAN, M. C. Ascorbic Acid Levels in Aqueous and Vitreous Humors of the Rabbit: Effects of Inflammation and Ceruloplasmin	291
EISENFELD, A. J., BUNT-MILAM, A. H. and SAARI, J. C. Localization of Retinoid-binding Proteins in Developing Rat Retina	299
COLLIER, L. L., KING, E. J. and PRIEUR, D. J. Aberrant Melanosome Development in the Retinal Pigmented Epithelium of Cats with Chediak-Higashi Syndrome	305
MCCARTNEY, M. and DICKSON, D. H. Photoreceptor Synaptic Ribbons: Three-Dimensional Shape, Orientation and Diurnal (Non) Variation	313
SATO, S., RUSSELL, P. and KINOSHITA, J. H. Analysis of the Proteins in the Rhesus Monkey Lens	323
NAKAGAWA, S., NISHIDA, T. and MANABE, R. Actin Organization in Migrating Corneal Epithelium of Rabbits in situ	335
REDDI, A. S. Collagen Metabolism in the Retina of Normal and Diabetic Rats	345
BUCALA, R., MANABE, S., URBAN, R. C. and CERAMI, A. Nonenzymatic Modification of Lens Crystallins by Prednisolone Induces Sulfhydryl Oxidation and Aggregate Formation: In Vitro and In Vivo Studies	353
SAAVEDRA, R. A., CORDOBA, C. and ANDERSON, G. R. LDH _k in the Retina of Diverse Vertebrate Species: a Possible Link to the Warburg Effect	365
SHUMAN, M. A. and MERKEL, C. H. III. Urokinase Binding to Bovine Corneal Endothelial Cells	371
ARAIE, M. and MAURICE, D. M. A Re-evaluation of Corneal Endothelial Permeability to Fluorescein	383
ARAIE, M. Time Change of Rabbit Aqueous Flow Under Influence of Adrenergic Drugs	391
SINGH, S. V., SRIVASTAVA, S. K. and AWASTHI, Y. C. Effect of 3,5-di-t-Butyl-4-Hydroxytoluene (BHT) on Glutathione-linked Detoxification Mechanisms of Rat Ocular Lens	405
TAKEMOTO, L. J., HANSEN, J. S. and HORWITZ, J. Antisera to Synthetic Peptides of Lens MIP26K (Major Intrinsic Polypeptide): Characterization and Use as Site-specific Probes of Membrane Changes in the Aging Human Lens	415
LETTER TO THE EDITORS	
GIBLIN, F. J., MCCREADY, J. P. and REDDY, V. N. Response of Cultured Human Lenses to H_2O_2	423

NUMBER 4, OCTOBER 1985

PRIZE AWARDED TO HANS BLOEMENDAL	427
BLOEMENDAL, H. Lens Research from Protein to Gene	429
SPINELLI, D., DE FELICE, G. P., VIGASIO, F. and COGGI, G. The Iris Vessels in the Exfoliation Syndrome: Ultrastructural Changes	449

WEALE, R. A. Human Lenticular Fluorescence and Transmissivity, and their Effects on Vision	457
WILLIAMS, E. H., CHAPLAIN, T. L. and MEAKEM, T. A Temporal and Spatial Study of the Synthesis and Degradation of Water-Soluble and Insoluble Proteins in Galactosemic Rat Lenses	475
SAMPLES, J. B., NAYAK, S. K., GUALTIER, C. and BINDER, P. S. Effect of Hydrocortisone on Corneal Endothelial Cells In Vitro	487
DUNCAN, T. E. and O'STEEN, W. K. The Diurnal Susceptibility of Rat Retinal Photoreceptors to Light-induced Damage	497
KATAKAMI, C., APPEL, A., LIPMAN, L. M. J. and KAO, W. W. -Y. Synthesis of Chondroitin Sulfate by Fibrotic Vitreous Induced by Monocytes and Lymphocytes	509
OBARA, Y., MATSUZAWA, T., KUBA, N. and FUJITA, K. Retinal Damage in Hatched Chicks Induced by Formoguanamine. Decrease in Ornithine Aminotransferase Activity and Vitamin B ₆ Content	519
TAURA, T., GIBLIN, F. J. and REDDY, V. N. Further Observations on the Effect of Galactose on the Development of X-ray induced Cataract in Mice	527
JOSE, J. G. and PITTS, D. G. Wavelength Dependency of Cataracts in Albino Mice Following Chronic Exposure	545
LETTERS TO THE EDITORS	
HIGHTOWER, K. R. and FARNUM, R. Calcium Induces Opacities in Cultured Human Lenses	565
OZAKI, L., JAP, P. and BLOEMENDAL, H. Protein Synthesis in Bovine and Human Nuclear Fiber Cells	569
GRAW, J., SUMMER, K.-H., MICHEL, C. and BORS, W. Catalase and Superoxide Dismutase Activities in Lenses of Cataractous <i>NOP</i> -Mice	577

NUMBER 5, NOVEMBER 1985

JACOBSON, B., DORFMAN, T., BASU, P. K. and HASANY, S. M. Inhibition of Vascular Endothelial Cell Growth and Trypsin Activity by Vitreous	581
HARRIS, T. M., BERRY, E. R., PAKURAR, A. S. and SHEPPARD, L. B. Biochemical Transformation of Bulbar Conjunctiva into Corneal Epithelium: an Electrophoretic Analysis	597
DESROCHERS, P. E., PRATT, K. A., FROMM, P. O. and HOFFERT, J. R. Oxygen Diffusion in the Trout Retina	607
WIEDEMANN, P., RYAN, S. J., NOVAK, P. and SORGENTE, N. Vitreous Stimulates Proliferation of Fibroblasts and Retinal Pigment Epithelial Cells	619
CUNY, R. and ZALIK, S. E. Comparison of Newt Lens Regeneration Stimulating Activity in Preparations of Mammalian Thyrotropin and Fibroblast Growth Factor Purified by Various Methods	629
SPERBER, G. and BILL, A. Blood Flow and Glucose Consumption in the Optic Nerve, Retina and Brain: Effects of High Intraocular Pressure	639
WEALE, R. A. The Post-mortem Preservation of the Transmissivity of the Human Crystalline Lens	655
LETTERS TO THE EDITOR	
CRIPPA, P. R., ITO, A. S., MASOTTI, L. and PASQUALI-RONCETTI, I. Isolation and Purification of Melanosomal Membranes from Bovine Eyes	661
ADAMIS, A. P., MOLNAR, M. L., TRIPATHI, B. J., EMMERSON, M. S., STEFANSON, K. and TRIPATHI, R. C. Neuronal-specific Enolase in Human Corneal Endothelium and Posterior Keratocytes	665
ANNOUNCEMENTS	669

NUMBER 6, DECEMBER 1985

SKIPSKI, I. A. L. and SCOTT, W. N. Age-related Changes in Carbonic Anhydrase of Toad Lens	671
CHAN, K. Y. and HASCHKE, R. H. Specificity of a Neuronotrophic Factor from Rabbit Corneal Epithelial Cultures	687

HAWKINS, R. K., JANSEN, H. G. and SANYAL, S. Development and Degeneration of Retina in <i>rd</i> s Mutant Mice: Photoreceptor Abnormalities in the Heterozygotes	701
ELIASON, J. A. Angiogenic Activity of the Corneal Epithelium	721
WILLIAMS, R. N., DELAMERE, N. A. and PATERSON, C. A. Generation of Lipoxxygenase Products in the Avascular Tissues of the Eye	733
JOHANSSON, J.-O. Influence of Low IOP and Low Calcium on Retrograde Axoplasmic Transport in Rat Optic Nerve In Vitro	739
McFALL-NGAI, M. J., DING, L.-L., TAKEMOTO, L. J. and HORWITZ, J. Spatial and Temporal Mapping of the Age-related Changes in Human Lens Crystallins	745
REUTER, J. H., ZEILMAKER, G. H. and SANYAL, S. Effects of Partial Receptor Cell Loss on the Electroretinogram of Chimaeric Mice	759
SHIONO, T., KADOR, P. F. and KINOSHITA, J. H. Stimulation of the Hexose Monophosphate Pathway by Pyrroline-5-Carboxylate Reductase in the Lens	767
LETTERS TO THE EDITORS	
CRABBE, M. J. C. Ocular Diamine Oxidase Activity	777

AUTHOR INDEX

- ADAMIS, A. P., MOLNAR, M. L., TRIPATHI, B. J., EMMERSON, M. S., STEFANSSON, K. and TRIPATHI, R. C., Neuronal-specific enolase in human corneal endothelium and posterior keratocytes, 655
- ALI, S. (see BETTELHEIM, F. A.), 1
- ANDERSON, G. R. (see SAAVEDRA, R. A.), 365
- APPEL, A. (see KATAKAMI, C.), 509
- ARAIE, M., Time change of rabbit aqueous flow under influence of adrenergic drugs, 391
- ARAIE, M. and MAURICE, D. M., A re-evaluation of corneal endothelial permeability to fluorescein, 383
- ARDEN, G. B. (see DOSHI, M.), 61
- AUSPRUNK, D. H. (see RICHARDSON, T. M.), 31
- AWASTHI, Y. C. (see SINGH, S. V.), 201, 405
- BAKER, B. N. (see PENN, J. S.), 275
- BASU, P. K. (see JACOBSON, B.), 581
- BAZAN, N. G. (see REDDY, T. S.), 87
- BERRY, E. R. (see HARRIS, T. M.), 597
- BETTELHEIM, F. A. and ALI, S., Light scattering of normal human lens III. Relationship between forward and back scatter of whole excised lenses, 1
- BETTELHEIM, F. A. and CHYLACK, L. T. JR., Light scattering of whole excised human cataractous lenses. Relationships between different light scattering parameters, 19
- BILL, A. (see SPERBER, G.), 639
- BINDER, P. S. (see SAMPLES, J. B.), 487
- BIZEC, J. C., KLETHI, J. and MANDEL, P., Calcium-dependent regulation of adenylate cyclase and phosphodiesterase activities in bovine lens: Involvement of lens calmodulin, 239
- BLANKS, J. C. (see SCHMIDT, S. Y.), 159
- BLOEMENDAL, H., Lens research from protein to gene, 429
- BLOEMENDAL, H. (see OZAKI, L.), 569
- BORS, W. (see GRAW, J.), 577
- BOULTON, M. and MARSHALL, J., Repigmentation of human retinal pigment epithelial cells in vitro, 209
- BUCALA, R., MANABE, S., URBAN, R. C. and CERAMI, A., Nonenzymatic modification of lens crystallins by prednisolone induces sulfhydryl oxidation and aggregate formation: in vitro and in vivo studies, 353
- BUNT-MILAM, A. H. (see EISENFELD, A. J.), 299
- CARIOTO, L. A. (see PERESS, N. S.), 145
- CERAMI, A. (see BUCALA, R.), 353
- CHAN, K. Y. and HASCHKE, R. H., Specificity of a neuronotrophic factor from rabbit corneal epithelial cultures, 687
- CHAN, L. S. (see LI, W.), 191
- CHAPLAIN, T. L. (see WILLIAMS, E. H.), 475
- CHEN, C.-H. (see CHEN, S. C.), 77
- CHEN, S. C. and CHEN, C.-H., Purification and characterization of two vascular endothelium effectors from fetal bovine retina, vitreous, and serum, 77
- CHYLACK, L. T. JR (see BETTELHEIM, F. A.), 19
- COGGI, G. (see SPINELLI, D.), 449
- COLLIER, L. L., KING, E. J. and PRIEUR, D. J., Aberrant melanosome development in the retinal pigmented epithelium of cats with Chediak-Higashi syndrome, 305
- CORDOBA, C. (see SAAVEDRA, R. A.), 365
- CRABBE, M. J. C., Ocular diamine oxidase activity, 777
- CRIPPA, P. R., ITO, A. S., MASOTTI, L. and PASQUALI-RONCETTI, I., Isolation and purification of melanosomal membranes from bovine eyes, 661
- CUNY, R. and ZALIK, S. E., Comparison of newt lens regeneration stimulating activity in preparations of mammalian thyrotropin and fibroblast growth factor purified by various methods, 629
- DE FELICE, G. P. (see SPINELLI, D.), 449
- DELAMERE, N. A. and PATERSON, C. A., Characteristics of ^{45}Ca uptake by the rabbit lens, 11
- DELAMERE, N. A. (see WILLIAMS, R. N.), 733
- DESROCHERS, P. E., PRATT, K. A., FROMM, P. O. and HOFFERT, J. R., Oxygen diffusion in the trout retina, 607
- DICKSON, D. H. (see MCCARTNEY, M.), 313
- DILLON, J., ROY, D. and SPECTOR, A., The photolysis of lens fiber membranes, 53

- DING, L.-L. (see McFALL-NGAI, M. J.), 745
- DORFMAN, T. (see JACOBSON, B.), 581
- DOSHI, M., VOADEN, M. J. and ARDEN, G. B., Cyclic GMP in the retina of normal mice and those heterozygous for early-onset photoreceptor dystrophy, 61
- DUNCAN, T. E. and O'STEEN, W. K., The diurnal susceptibility of rat retinal photoreceptors to light-induced damage, 497
- EISENFELD, A. J., BUNT-MILAM, A. H. and SAARI, J. C., Localization of retinoid-binding proteins in developing rat retina, 299
- ELIASON, J. A., Angiogenic activity of the corneal epithelium, 721
- EMMERSON, M. S. (see ADAMIS, A. P.), 665
- FARNUM, R. (see HIGHTOWER, K. R.), 565
- FROMM, P. O. (see DESROCHERS, P. E.), 607
- FUJITA, K. (see OBARA, Y.), 519
- GIBLIN, F. J., MCCREADY, J. P. and REDDY, V. N., Response of cultured human lenses to H_2O_2 , 423
- GIBLIN, F. J. (see TAURA, T.), 527
- GRAW, J., SUMMER, K.-H., MICHEL, C. and BORS, W., Catalase and superoxide dismutase activities in lenses of cataractous *NPO*-mice, 577
- GRIMES, P. A., Fluorescein distribution in retinas of normal and diabetic rats, 227
- GRUENEWALD, R. (see PERESS, N. S.), 145
- GUALTIER, C. (see SAMPLES, J. B.), 487
- HANSEN, J. S. (see TAKEMOTO, L. J.), 415
- HARRIS, T. M., BERRY, E. R., PAKURAR, A. S. and SHEPPARD, L. B., Biochemical transformation of bulbar conjunctiva into corneal epithelium: an electrophoretic analysis, 597
- HASANY, S. M. (see JACOBSON, B.), 581
- HASCHKE, R. H. (see CHAN, K. Y.), 687
- HAWKINS, R. K., JANSEN, H. G. and SANYAL, S., Development and degeneration of retina in *rd*s mutant mice: photoreceptor abnormalities in the heterozygotes, 701
- HAYASAKA, S. (see KITAOKA, M.), 259
- HAYASAKA, S. (see NAKAZAWA, M.), 249
- HERSCHLER, J. (see LITIN, B. S.), 183
- HESS, H. H. (see ZIGLER, J. S. JR), 67
- HIGHTOWER, K. R. and FARNUM, R., Calcium induces opacities in cultured human lenses, 565
- HIKIDA, M. and IWATA, S., Studies on the eye lens in poikilothermal animals. II. Stimulation of anaerobic glycolysis in rainbow trout lens incubated with Ca^{2+} -free medium, 179
- HIKIDA, M. (see IWATA, S.), 171
- HILL, D. W. and HOUSEMAN, J., Retinal blood flow in the cat following periods of light and darkness, 219
- HOFFERT, J. R. (see DESROCHERS, P. E.), 607
- HORWITZ, J. (see McFALL-NGAI, M. J.), 745
- HORWITZ, J. (see TAKEMOTO, L. J.), 415
- HOUSEMAN, J. (see HILL, D. W.), 219
- HOWARD, A. G. (see PENN, J. S.), 275
- IGIĆ, R., Kallikrein and kinases in ocular tissues, 116
- ITO, A. S. (see CRIPPA, P. R.), 661
- IWATA, S. and HIKIDA, M., Studies on the eye lens in poikilothermal animals. I. Comparative studies on cation maintenance systems in rainbow trout and rat lenses, 171
- IWATA, S. (see HIKIDA, M.), 179
- JACOBSON, B., DORFMAN, T., BASU, P. K. and HASANY, S. M., Inhibition of vascular endothelial cell growth and trypsin activity by vitreous, 581
- JANSEN, H. G. (see HAWKINS, R. K.), 701
- JAP, P. (see OZAKI, L.), 569
- JENTSCH, T. J., VON DER HAAR, B., KELLER, S. K. and WIEDERHOLT, M., Response of the intracellular potentials of cultured bovine lens cells to ions and inhibitors, 131
- JERNIGAN, H. M. JR, Role of hydrogen peroxide in riboflavin-sensitized photodynamic damage to cultured rat lenses, 121
- JOHANSSON, J.-O., Influence of low IOP and low calcium on retrograde axoplasmic transport in rat optic nerve in vitro, 739
- JONES, M. A. (see LITIN, B. S.), 183

- JOSE, J. G. and PITTS, D. G., Wavelength dependency of cataracts in albino mice following chronic exposure, 545
- KADOR, P. F. (see SHIONO, T.), 767
- KAO, W. W.-Y. (see KATAKAMI, C.), 509
- KATAKAMI, C., APPEL, A., LIPMAN, L. M. J. and KAO, W. W.-Y., Synthesis of chondroitin sulfate by fibrotic vitreous induced by monocytes and lymphocytes, 509
- KELLER, S. K. (see JENTSCH, T. J.), 131
- KHATAMI, M. (see LI, W.), 191
- KING, E. J. (see COLLIER, L. L.), 305
- KINOSHITA, J. H. (see SATO, S.), 323
- KINOSHITA, J. H. (see SHIONO, T.), 767
- KITAOKA, M., NAKAZAWA, M. and HAYASAKA, S., Lysosomal enzymes in human tear fluid collected by filter paper strips, 259
- KLETHI, J. (see Bizec, J. C.), 239
- KUBA, N. (see OBARA, Y.), 519
- KULKARNI, P. and SRINIVASAN, B. D., Anti-inflammatory effects of ketoprofen in rabbit corneal epithelial wound model, 267
- LI, W., CHAN, L. S., KHATAMI, M. and ROCKEY, J. H., Characterization of glucose transport by bovine retinal capillary pericytes in culture, 191
- LIPMAN, L. M. J. (see KATAKAMI, C.), 509
- LITIN, B. S., JONES, M. A. and HERSCHLER, J., Aqueous humor-stimulated protein biosynthesis in ocular tissue fibroblast culture, 183
- LOMBARDINI, J. B. (see TSUNG, P.-K.), 97, 285
- MCCARTNEY, M. and DICKSON, D. H., Photoreceptor synaptic ribbons: three-dimensional shape, orientation and diurnal (non) variation, 313
- MC CREADY, J. P. (see GIBLIN, F. J.), 423
- McFALL-NGAI, M. J., DING, L.-L., TAKEMOTO, L. J. and HORWITZ, J., Spatial and temporal mapping of the age-related changes in human lens crystallins, 745
- McGAHAN, M. C., Ascorbic acid levels in aqueous and vitreous humors of the rabbit: effects of inflammation and ceruloplasmin, 291
- MANABE, R. (see NAKAGAWA, S.), 335
- MANABE, S. (see BUCALA, R.), 353
- MANDEL, P. (see BIZEC, J. C.), 239
- MARKS, M. S. (see RICHARDSON, T. M.), 31
- MARSHALL, J. (see BOULTON, M.), 209
- MASOTTI, L. (see CRIPPA, P. R.), 661
- MATSUZAWA, T. (see OBARA, Y.), 519
- MAURICE, D. M. (see ARAIE, M.), 383
- MEAKEM, T. (see WILLIAMS, E. H.), 475
- MERKEL, C. H. III (see SHUMAN, M. A.), 371
- MICHEL, C. (see GRAW, J.), 577
- MILLER, M. (see RICHARDSON, T. M.), 31
- MIZUNO, K. (see NAKAZAWA, M.), 249
- MOLNAR, M. L. (see ADAMIS, A. P.), 665
- NAKAGAWA, S., NISHIDA, T. and MANABE, R., Actin organization in migrating corneal epithelium of rabbits in situ, 335
- NAKAZAWA, M., TSUCHIYA, M., HAYASAKA, S., and MIZUNO, K., Tyrosinase activity in the uveal tissue of the adult bovine eye, 249
- NAKAZAWA, M. (see KITAOKA, M.), 259
- NAYAK, S. K. (see SAMPLES, J. B.), 487
- NISHIDA, T. (see NAKAGAWA, S.), 335
- NOVAK, P. (see WIEDEMANN, P.), 619
- OBARA, Y., MATSUZAWA, T., KUBA, N. and FUJITA, K., Retinal damage in hatched chicks induced by formoguanamine. Decrease in ornithine aminotransferase activity and vitamin B₆ content, 519
- O'STEEN, W. K. (see DUNCAN, T. E.), 497
- OZAKI, L., JAP, P. and BLOEMENDAL, H., Protein synthesis in bovine and human nuclear fiber cells, 569
- PAKURAR, A. S. (see HARRIS, T. M.), 597
- PASQUALI-RONCETTI, I. (see CRIPPA, P. R.), 661

- PATERSON, C. A. (see DELAMERE, N. A.), 11
- PATERSON, C. A. (see WILLIAMS, R. N.), 733
- PENN, J. S., BAKER, B. N., HOWARD, A. G. and WILLIAMS, T. P., Retinal light-damage in albino rats: lysosomal enzymes, rhodopsin, and age, 275
- PERESS, N. S., GRUENEWALD, R. and CARIOTO, L. A., Intra-ocular and CNS listeriosis following systemic infection in Wistar rats with chronic serum sickness, 145
- PITTS, D. G. (see JOSE, J. G.), 545
- PRATT, K. A. (see DESROCHERS, P. E.), 607
- PRIEUR, D. J. (see COLLIER, L. L.), 305
- REDDY, A. S., Collagen metabolism in the retina of normal and diabetic rats, 345
- REDDY, T. S. and BAZAN, N. G., Synthesis of docosahexaenoyl-arachidonoyl and palmitoyl-coenzyme A in ocular tissues, 87
- REDDY, V. N. (see GIBLIN, F. J.), 423
- REDDY, V. N. (see TAURA, T.), 527
- REUTER, J. H., ZEILMAKER, G. H. and SANYAL, S., Effects of partial receptor cell loss on the electroretinogram of chimaeric mice, 759
- RICHARDSON, T. M., MARKS, M. S., AUSPRUNK, D. H. and MILLER, M., A morphologic and morphometric analysis of the aqueous outflow system of the developing cat eye, 31
- ROCKEY, J. H. (see LI, W.), 191
- ROY, D. (see DILLON, J.), 53
- RUSSELL, P. (see SATO, S.), 323
- RYAN, S. J. (see SUNALP, M. A.), 105
- RYAN, S. J. (see WIEDEMANN, P.), 619
- SAAVEDRA, R. A., CORDOBA, C. and ANDERSON, G. R., LDH_x in the retina of diverse vertebrate species: a possible link to the Warburg effect, 365
- SAARI, J. C. (see EISENFELD, A. J.), 299
- SAMPLES, J. B., NAYAK, S. K., GUALTIER, C. and BINDER, P. S., Effect of hydrocortisone on corneal endothelial cells in vitro, 487
- SANDBERG, M. A. (see SCHMIDT, S. Y.), 159
- SANYAL, S. (see HAWKINS, R. K.), 701
- SANYAL, S. (see REUTER, J. H.), 759
- SATO, S., RUSSELL, P. and KINOSHITA, J. H., Analysis of the proteins in the rhesus monkey lens, 323
- SCHMIDT, S. Y., BLANKS, J. C. and SANDBERG, M. A., Enhancement of (PolyA⁺) RNA synthesis in light in isolated intact photoreceptor cells of the rat, 159
- SCOTT, W. N. (see SKIPSKI, I. A. L.), 671
- SHEPPARD, L. B. (see HARRIS, T. M.), 597
- SHONO, T., KADOR, P. F. and KINOSHITA, J. H., Stimulation of the hexose monophosphate pathway by pyrroline-5-carboxylate reductase in the lens, 767
- SHUMAN, M. A. and MERKEL, C. H. II., Urokinase binding to bovine corneal endothelial cells, 371
- SINGH, S. V., SRIVASTAVA, S. K. and AWASTHI, Y. C., Effect of 3,5-di-*t*-butyl-4-hydroxytoluene (BHT) on glutathione-linked detoxification mechanisms of rat ocular lens, 405
- SINGH, S. V., SRIVASTAVA, S. K. and AWASTHI, Y. C., Purification and characterization of the two forms of glutathione S-transferase present in human lens, 201
- SKIPSKI, I. A. L. and SCOTT, W. N., Age-related changes in carbonic anhydrase of toad lens, 671
- SORGENTE, N. (see SUNALP, M. A.), 105
- SORGENTE, N. (see WIEDEMANN, P.), 619
- SPECTOR, A. (see DILLON, J.), 53
- SPEBER, G. and BILL, A., Blood flow and glucose consumption in the optic nerve, retina and brain: effects of high intraocular pressure, 639
- SPINELLI, D., DE FELICE, G. P., VIGASIO, F. and COGGI, G., The iris vessels in the exfoliation syndrome: ultrastructural changes, 449
- SRINIVASAN, B. D. (see KULKARNI, P.), 267
- SRIVASTAVA, S. K. (see SINGH, S. V.), 201, 405
- STEFANSSON, K. (see ADAMIS, A. P.), 665
- SUMMER, K.-H. (see GRAW, J.), 577
- SUNALP, M. A., WIEDEMANN, P., SORGENTE, N. and RYAN, S. J., Effect of adriamycin on experimental proliferative vitreoretinopathy in the rabbit, 105
- TAKEMOTO, L. J., HANSEN, J. S. and HORWITZ, J., Antisera to synthetic peptides of lens MIP26K (major intrinsic polypeptide): characterization and use as site-specific probes of membrane changes in the aging human lens, 415
- TAKEMOTO, L. J. (see McFALL-NGAI, M. J.), 745

- TAURA, T., GIBLIN, F. J. and REDDY, V. N., Further observations on the effect of galactose on the development of X-ray-induced cataract in mice, 527
- TRIPATHI, B. J. (see ADAMIS, A. P.), 665
- TRIPATHI, R. C. (see ADAMIS, A. P.), 665
- TSUCHIYA, M. (see NAKAZAWA, M.), 249
- TSUNG, P. K. and LOMBARDINI, J. B., Cathepsin B and D, and Ca^{2+} -dependent neutral protease activities in the retina of taurine-depleted rats, 285
- TSUNG, P.-K. and LOMBARDINI, J. B., Identification of low- Ca^{2+} - and high- Ca^{2+} -requiring neutral proteases in rat retina, 97
- URBAN, R. C. (see BUCALA, R.), 353
- VIGASIO, F. (see SPINELLI, D.), 449
- VOADEN, M. J. (see DOSHI, M.), 61
- VON DER HAAR, B. (see JENTSCH, T. J.), 131
- WEALE, R. A., Human lenticular fluorescence and transmissivity, and their effects on vision, 457
- WEALE, R. A., The post-mortem preservation of the transmissivity of the human crystalline lens, 655
- WIEDEMANN, P., RYAN, S. J., NOVAK, P. and SORGENTE, N., Vitreous stimulates proliferation of fibroblasts and retinal pigment epithelial cells, 619
- WIEDEMANN, P. (see SUNALP, M. A.), 105
- WIEDERHOLT, M. (see JENTSCH, T. J.), 131
- WILLIAMS, E. H., CHAPLAIN, T. L. and MEAKEM, T. A temporal and spatial study of the synthesis and degradation of water soluble and insoluble proteins in galactosemic rat lenses, 475
- WILLIAMS, R. N., DELAMERE, N. A. and PATERSON, C. A., Generation of lipoxxygenase products in the avascular tissues of the eye, 733
- WILLIAMS, T. P. (see PENN, J. S.), 275
- ZALIK, S. E. (see CUNY, R.), 629
- ZEILMAKER, G. H. (see REUTER, J. H.), 759
- ZIGLER, J. S. JR and HESS, H. H., Cataracts in the Royal College of Surgeons rat. Evidence for initiation by lipid peroxidation products, 67

SUBJECT INDEX

- Acetazolamide, 391
- Acid phosphatase, 259
- Actin, 335
- Adenylate cyclase, 239
- Adriamycin (doxorubicin), 105
- Aerobic glycolysis, 365
- Age dependence, 1
- Age, vision, 457
- Aging, 239, 275, 671, 745
- α -D-mannosidase, 259
- α -L-fucosidase, 259
- Amiloride, 131
- Ammeline, 519
- Anaerobic glycolysis, 171, 179
- Angiogenesis, 721
- Antioxidants, 405
- Aqueous flow rate, 391
- Aqueous humor, 117, 183, 291
- Aqueous outflow system, 31
- Aqueous–cornea distribution ratio, 383
- Arachidonic acid, 733
- Ascorbic acid, 291
- Aspartate, 159
- Aspirin, 353

- Back scatter, 1
- Basement membrane, 449
- Basement membrane collagen, 345
- β -D-glucuronidase, 259
- Bicarbonate, 131
- Blindness, 519
- Blood flow, 639
- Blood–retinal barrier, 227
- Bovine, 87, 249, 661
- Bovine lens, 239, 569
- Brain, 639

- Calcium, 11, 131, 565
- Calcium action, 239
- Calcium antagonists, 11
- Ca²⁺, 739
- Ca²⁺-dependent neutral protease, 97, 285
- Ca²⁺-free, 179
- Calmodulin, 239
- Calpain I, 97
- Calpain II, 97
- Carbonic anhydrase, 671
- Cat, 31, 305
- Cat retina, 219
- Catalase, 577
- Cataract, 19, 53, 67, 353, 545, 565, 577, 767
- Cataract cold, 171
- Cataract, senile, 53
- Cataract, sugar, 475
- Cataract, warm, 171
- Cataract, X-ray, 527
- Cation, 121
- Cation balance, 171
- Cation transport, 179
- Cathepsin B, 285
- Cathepsin, D, 285
- Cathepsins, 275
- Cell culture, 77, 131, 687, 721
- Cell death, 497
- Cell proliferation, 77
- Cellular retinal-binding protein, 299
- Cellular retinol-binding protein, 299
- Ceruloplasmin, 291
- Characterization, 77
- Chediak–Higashi syndrome, 305
- Chick, 519
- Chimaera, 759
- Choline, 121
- Chondroitinase ABC, 509
- Chondroitinase AC, 509
- Choroid, 87, 117
- Choroid plexus, 145
- Ciliary body, 117, 249
- Ciliary processes, 145
- Collagen, 345
- Conjunctiva, rabbit, 267
- Conjunctival epithelium, 687
- Cornea, 87, 335, 733
- Corneal endothelial cells, 371
- Corneal endothelial permeability, 383
- Corneal endothelium, 487, 665
- Corneal epithelium, 687, 721
- Corneal epithelium regeneration, 597
- Corneal preservation, 487
- Cortex, 239
- Crystalline lens, 545
- Crystallins, 323, 745
- Culture, 191
- cAMP phosphodiesterase, 239
- cGMP, 61
- cGMP phosphodiesterase, 239
- Cyclic photoperiod, 497
- Cytidine, 159
- Cytosol protease, 97

- Dehydroascorbic acid, 291
- Delta¹-pyrroline-5-carboxylate, 767
- Δ^1 -pyrroline-5-carboxylate reductase, 519
- Depolarization, 1, 19
- Development, 31, 299, 687
- Dextran, 487
- Diamine oxidase, 777
- Dissymmetry, 1, 19
- Diurnal susceptibility, 497
- Diurnal variation, 313
- DNA synthesis, 487

- Effector, 77
- Electron microscopy, 345
- Electroretinogram, 159, 759
- Endothelial-cell-growth inhibitor, 581
- Endothelium, 665
- Epithelial cells, 239
- Epithelial migration, 335
- Epithelium, 335

- Evolution, 365
- Exfoliation syndrome, 449
- Fibrinolysis, 371
- Fibroblast growth factor, 629
- Fibroblasts, 183, 619
- Fibronectin, 335
- Filter paper strip, 259
- FITC-dextran, 391
- Flow velocity, 219
- Fluorescein, 227, 383
- Fluorescein in plasma, 227
- Formoguanamine, 519
- Forward scatter, 1
- Free radicals, 527
- Frog, 87
- Galactose, 527
- Gel electrophoresis, 183
- Glucocorticoid, 353
- Glucose, 191
- Glucose consumption, 639
- Glucose metabolism, 767
- Glucosyltransferase, 345
- Glucuronidation, 227
- Glutamate, 159
- Glutathione, 53, 201, 405
- Glutathione peroxidase, 201, 405
- Glutathione reductase, 405
- Glutathione transferase, 519
- Glutathione S-transferases, 201, 405
- Glycosaminoglycans, 509
- Guanidinoethanesulfonate, 285
- Guinea pig, 313
- Gyrate atrophy, 767
- Heterozygous mice, 61
- Hexose monophosphate pathway, 767
- High-performance liquid chromatography (HPLC), 67, 291
- Hormones, 497
- Horseradish peroxidase, 739
- HPLC, 67, 291
- Human, 87
- Human lens, 19, 201, 323, 423, 565, 569, 745
- Hyalocytes, 581
- Hyaluronidase, 509
- Hydrocortisone, 487
- Hydrogen peroxide, 121, 423
- 6-Hydroxydopamine, 159
- 3-Hydroxykynurenine glucoside, 53
- Hyperornithinemia, 767
- Hyperoxia, 607
- Immune complex, 145
- Immunofluorescence, 335
- Indomethacin, 267
- Inflammation, 291
- Infra-red angiography, 219
- Intracellular potentials, 131
- Intraocular fluids, 291
- Intraocular pressure, 639
- Intrinsic protein, 53
- Iris, 117, 629
- Iris vessels, 449
- Iris-ciliary body, 267
- Isoelectric focusing, 671
- Kallikrein, 117
- Keratocytes, 665
- Ketoprofen, 267
- Kininase I, 117
- Kininase II, 117
- Krogh permeation coefficient, 607
- Lactate dehydrogenase, 365
- Lactic acid, 179
- Lactic acid production, 171
- L-3,4-dihydroxyphenylalanine (L-DOPA), 249
- Lens, 1, 11, 87, 121, 131, 201, 323, 423, 429, 565, 577, 733, 745
- Lens culture, 67
- Lens, bovine 569
- Lens, carbonic anhydrase, 671
- Lens epithelial cells, 131
- Lens fiber membrane, 53
- Lens morphology, 527
- Lens, rainbow trout, 171, 179
- Lens, rat, 475, 767
- Lens regeneration, 629
- Lens transmissivity, 655
- Lens transparency, 179
- Lenticular fluorescence, 457
- Leucopenia, 721
- Light, 219
- Light damage, 497
- Light effects, 159
- Light microscopy, 527
- Light scattering, 1
- Light scattering intensities, 19
- Light toxicity, 275
- Lipid peroxidation, 67
- Lipofuscin, 209
- Lipoxygenase, 733
- Listeria monocytogenes*, 145
- Long-chain acyl CoA synthetase, 87
- Low molecular weight proteins, 323
- Lymphocytes, 509
- Lysosomal enzyme, 259
- Major intrinsic polypeptide, 415
- Melanin, 209
- Melanosomal membranes, 661
- Melanosome development, 305
- Membrane proteins, 323
- Messenger RNAs, 159
- Metaplasia, 597
- Mice, 527, 577, 701, 759
- Microdissection, 67
- Microsomes, 87
- Mitogen, 77, 619
- M-K medium, 487
- Monocytes, 509
- Morphology, 31
- Morphometry, 31, 313
- Mutant gene, 701, 759
- N*-acetyl- β -D-glucosaminidase, 259

- Nakano mouse, 767
 Neoplastic transformation, 365
 Nerve growth factor, 687
 Neurogenesis, 687
 Neuronal-specific enolase, 665
 Neurotoxic substances, 159
 Newt, 629
 Nucleus, 239
- Ocular hypotony, 739
 Optic nerve, 639
 Organ culture, 121, 335
 Ornithine aminotransferase, 519
 Ouabain, 131, 171, 179
 Outer segments, 701
 Oxygen, 607
 Oxygen diffusion, 607
- Pentobarbital, 639
 Permeability, 11
 PG synthesis, 267
 pH, 131
 Phagocytosis, 209
 Phagosomes, 701
 Phenoxybenzamine, 391
 Phenylephrine, 391
 Philly mouse, 767
 Photo-oxidation, 53, 121
 Photoreceptor cells, 159, 759
 Photoreceptor dystrophy, 61
 Photoreceptors, 275, 313, 497, 701
 Photosensitized oxidation, 121
 Pigment epithelium, 87, 519
 Plasminogen activator, 371
 PMN response, 267
 Poikilothermal animal, 171
 Polyadenylated RNAs, 159
 Polyunsaturated fatty acids, 87
 Posterior subcapsular cataract formation, 67
 Potassium conductance, 131
 Preservation of optical properties post-mortem, 655
 Proliferation, 619
 Proliferative vitreoretinopathy, 105, 619
 Protease inhibitor, 581
 Protein biosynthesis, 183
 Protein synthesis, 475, 569
 Protein transformation, 597
 Purification, 77
- Rabbit, 105, 383, 391
 Rabbit ^{45}Ca uptake, 11
 Rabbit conjunctiva, 267
 Rainbow trout lens, 171, 179
 Rainbow trout retina, 607
 Rat, 87, 97, 121, 275, 739
 Rat lens, 475, 767
rd, 759
rds, 701
 Repigmentation, 209
 Retina, 61, 77, 87, 97, 117, 275, 299, 345, 365, 497, 519, 639, 759
 Retina, cat, 219
 Retina, isolated, 159
- Retina, rainbow trout, 607
 Retinal capillary pericytes, 191
 Retinal damage, 275, 497
 Retinal degeneration, 67, 159, 275, 701, 759
 Retinal light-damage, 275
 Retinal photoreceptors, 313
 Retinal pigment epithelial cells, 619
 Retinal pigment epithelium, 209
 RPE, melanosome development, 305
 Retinoid-binding proteins, 299
 Retrograde axoplasmic transport, 739
 Rhodopsin, 275
 RNA synthesis, 159
 Royal College of Surgeons (RCS) rat, 67
 Rubidium, 121
 Rubidium efflux, 67
- Salbutamol, 391
 Senile human cataracts, 53
 Sensory ganglion, 687
 Serum, 77
 Serum sickness, 145
 Singlet oxygen, 121
 Slit lamp, 527
 Sodium conductance, 131
 Sodium fluxes, 159
 Na,K-ATPase, 171, 179
 Soluble corneal proteins, 597
 Spectral transmissivity, 457
 Steroids, 487
s-triazine, 519
 Streptozotocin diabetes, 227, 345
 Sugar cataract, 475
 Sulfhydryl reagents, 671
 Superoxide dismutase, 577
 Sympathetic ganglion, 687
 Synaptic ribbons, 313
 Synthetic peptides, 415
- Taurine, 285
 Taurine-depleted retina, 285
t-butylated hydroxytoluene, 405
 Tearfluid, 259
 Temperature dependence, 171
 3-D reconstruction, 313
 Thyrotropin, 629
 Timolol, 391
 Tissue culture, 209, 487
 Toad (*Bufo marinus*), 671
 Toxicity, 105
 Transmission, 19
 Transmission electron microscopy, 305, 527
 Transport, 121, 191
 Trigeminal ganglion, 687
 Trophic factor, 687
 Tyrosinase, 249
- Ultrastructure, 449
 Ultraviolet light, 545
 Urethan, 639
 Urokinase, 371
 Urokinase inhibitor, 371
 UV-A, UV-B, 545
 Uveal tissue, 249

- Vascular endothelial cells, 77
- Vasostimulating factor, 721
- Vessel width, 219
- Vision, 457
- Vitamin B₆, 519
- Vitreous, 77, 87, 581, 619
- Vitreous fibrosis, 509
- Vitreous humor, 291
- Voltage dependence, 11
- Warburg effect, 365
- Water-insoluble proteins, 475
- Water-soluble proteins, 475
- Whole human lenses, 1
- Wound healing, 335
- X-ray cataract, 527

